Project	IEEE 802.16 Broadband Wireless Access Working Group <**http://ieee802.org/16**>
Title	Editorial Changes of IEEE C802.16j-06/013 (Multi-hop System Evaluation Methodology)
Date Submitted	2006-09-19
Source(s)	Dean Kitchener, Gamini Senarath, Mark Naden, Wen Tong, Peiying Zhu, Hang Zhang, David Steer, Derek Yu Nortel 3500 Carling Avenue Ottawa, On, K2H 8E9 Canada wentong@nortel.com Voice: 1-163-763-1316
Re:	Editorial changes on IEEE C802.16j-06/013
Abstract	This document captures the editorial changes for the Multi-hop System Evaluation Methodology.
Purpose	Editorial Corrections for IEEE C802.16j-06/013
Notice	
Release	
Patent Policy and Procedures	

Editorial Changes of IEEE C802.16j-06/013

Dean Kitchener, Gamini Senarath, Mark Naden, Wen Tong, Peiying Zhu, Hang Zhang, David Steer, Derek Yu

Nortel

1 Introduction

To the Editor: ~~xxxxx~~ is the text deletion, xxxxx is the text insertion

2 Detailed Editorial Changes

Page 2, Section 2
Delete
~~[Editor's note: adopt the modified IEEE802.16d SUI channel model as baseline [14], and open for further comparison with other models such as the path-loss models in [6]]~~

Page 4, Section 2.2.2.4
Delete
~~[Editor's note: The linkage with the path-loss models defined in and the usage models for the IEEE802.16j is FFS]~~

Page 3, Section 2.1.1
The Note column ;
Modified IEEE 802.16 Type A model
Modified IEEE 802.16 Type B model
Modified IEEE 802.16 Type C model

Page 3, Section 2.1.2.1
The modified IEEE 802.16 path-loss ~~and shadowing~~ model is recommended for these links where this is given in ~~by~~[~~14~~9]

Page 4, Section 2.1.2.2
For this link the ~~a~~ modified IEEE 802.16d channel model is recommended, as presented in section 2.1.2.1. There are three categories for this model, as shown in the previous section, where each category represents a different environment.

Page 6, Section 2.1.2.4
Consequently, the section 2.1.2.1 is a good model for this case, where all three categories (A, B, and C) are ~~now~~ applicable to cover different environments.

Page 8, Section 2.1.2.6

For this case an advanced LOS model is recommended. This is a two-slope model, where the breakpoint is dependant on the relay and MS antenna heights.

Page 9, Section 2.1.2.7

For this case, the model takes the minimum of an over-the-rooftop component and a round-the streets component. The round-the-streets component is based on a model by Berg, although this has been modified to be compatible with the advanced LOS model (see section 2.1.2.6), such that the visibility factor is included, and the effective road height to give the correct breakpoint in the first street section. The full model is shown below

Page 11, Section 2.1.2.7

For Type-F NLOS scenario the alternative path-loss model (for 5GHz) can be:

Page 12, Section 2.1.2.8
Delete
~~[Editor: The indoor model is FFS, the default model is shown in this section]~~

Page 12, Section 2.2.1.1
Delete
~~[Editor's note: The following informative text captures the advanced standard deviation correction factor for the lognormal shadowing]~~

Page 14, Section 2.2.2.2.2
For modelling the shadowing correlation between two BSs at a given MS location a model ~~based~~ is recommended based on one proposed ~~given~~ by Saunders.

Page 18, Section 3
Delete
~~[Editor's note: Full buffer is the baseline model, and needs to specify real-time traffic models. For this purpose, adopt [4] and use references]~~

Page 18, Section 3
This section describes the traffic models in detail. Section 3.1 addresses the DL and Section 3.2 the UL A major objective of multihop simulations is to provide the operator a view of the maximum number of ~~how many~~ active users that can be supported for a given service under a specified multihop configuration at a given coverage level. The traffic generated by a service should be accurately modeled in order to find out the performance of a system. This may be a time consuming exercise. Traffic modeling can be simplified, as explained below, by not modeling the user arrival process and/or assuming full queue traffic which is considered as the baseline. These two assumptions are further discussed preceding paragraphs. Modeling non-full-queue traffic is also discussed in the next subsections. ~~explained below~~

Page 19, Section 3
Modeling of user arrival process: Typically, all the users are not active at a given time and even the active users ~~they~~ might not register for the same service. In order to avoid different user registration and demand models, the objective of the proposed simulation is restricted ~~made limited~~ to evaluate the performance with the users who are maintaining a session with transmission activity. These can be used to determine the number of such registered users that can be supported. This document does not address the arrival process of such registered users, i.e. it does not address the statistics of subscribers that register and become active.

Page 19, Section 3

Full Queue model: In the full queue user traffic model, all the users in the system always have data to send or receive. In other words, there is always a constant amount of data that needs to be transferred at a given source, in contrast to bursts of data that follow an arrival process. This model allows the assessment of the spectral efficiency of the system independent of actual user traffic distribution type.

At the relay station, however, the traffic availability depends on the forwarded traffic from either base station, user or by another relay even in the full queue model and full queue model may or may not be applicable.

Page 19, Section 3.1

The required traffic models are listed in Table 5.

Table 1: Services to be considered

#	Application	Traffic Category	Definition Priority
1	Full buffer		Provided above
2	FTP	Best-effort	Provided in this Section.
3	Web Browsing	Interactive	Provided in this Section.
4	VoIP	Real-time	TBD
5	Video Streaming	Streaming	TBD
6	Live Video	Interactive Real-time	TBD

Page 20 Section 4.1.1

Link budget evaluations is a well known method for initial system planning and this needs to be carried out for relay to base, relay to user and base to user links separately. Although a link budget can be calculated separately for each link, it is the combination of the links that determines the performance of the system as a whole. Therefore, careful consideration needs to be given to the method of combining the individual link budgets to determine the system performance.

Page 20 Section 4.1.4

Increment section number to 4.2

Page 31, Section C.1.2.1

HTTP requests and TCP ACKs come under this category. It is not known, what percentage of traffic would be acks and HTTP requests in a broadband systems. It is clear that the size of the access page increases with time, while ACK messages and HTTP requests may not be increased by that much. However there is no known models for those traffic types and the complete (UL and DL) messages may need to be implemented in the simunlations to model those two traffic types, For simplicity, the HTTP requests and ACks are neglected for the initial performance evaluations. remains the same. Therefore, we can expect that in the future systems, the impact of AC K and HTTP requests will be negligible compared to size of the data contents.

Note to the editor: need to re-run the Figure caption and Table caption after implementation of above editorial changes